Bradley **Kohler**

B.Eng. Mechatronics Engineering · 5 Years of Professional Work Experience

Toronto, ON, Canada

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Skills

Programming Languages	Machine Learning	Microprocessor Firmware	Operating Systems	Hardware Design	Systems Design	Computer Mathematics	Continuous Integration
BASH	PyTorch	STM32	Linux	Verilog HDL	AutoCAD	Maple18	Docker
C/C++/C#	TensorFlow	Nordic	AndroidOS	NI Multisim	SolidWorks	NumPy	TravisCI
Python		Qualcomm	mbedOS	Eagle	Maplesim	Eigen	CircleCI
Java		Simulink	ChibiOS			MATLAB	Jenkins
HTML/CSS/JavaScript			FreeRTOS				Bamboo

Work Experience

STMicroelectronics (STM)

Waterloo, Ontario

Wireless Software Developer — *Sept. 2021 - Present*

- Added support to an existing LTE NB & MTC stack. Aided in debugging efforts, communicating with stack teams such as L1, PDCP, RLC, and MAC.
- Interpreted 3GPP LTE specifications and translated them to embedded C, leveraging expertise in software architecture for seamless integration.
- Diagnosed and resolved stack issues using Amarisoft and Rohde & Schwarz CMW wireless communication conformance testing equipment.
- Authored innovative tools, such as a Python tool named asngen, which generated a lightweight C translation layer from the 36.331 specification to replace the existing encoder/decoders. It enabled a decrease of read-only data by 148KB (48%) compared to the existing implementation.
- Built and maintained lab machines equipt with FPGAs, ASICs, Amarisoft, and Rohde & Schwarz equipment, ensuring a robust test environment.
- Assisted the ZigBee, Thread, and BLE Application teams in developing quality customer apps, demonstrating teamwork and customer focus.
- Communicated effectively with stack teams, including ZigBee APS, ZigBee NWK, and MAC 802.15.4, to aid in debugging efforts.

Labforge Inc.

Waterloo, Ontario

Camera Software & Embedded Firmware Developer — *May 2020 - Sept. 2021*

- Programmed neural network model structures in PyTorch using publications for reference, demonstrating research and implementation skills.
- Trained models for object detection in Python/PyTorch, such as Resnet-18, Resnet-50, and EfficientDet, using both public and private datasets.
- Created private datasets for training models for object detection, showcasing initiative and data management skills.
- Designed and programmed innovative approaches to object re-identification and tracking in C/C++ and Python, achieving fast results.
- Improved inertial sensor code bases in C/C++ and managed sensor processes as Unix systemd daemons on stereo cameras.
- Collaborated with another software developer to create a reliable C/C++ state estimation engine for stereo camera tracking, demonstrating teamwork and technical collaboration. The product was presented to the Royal Canadian Air Force (posted on YouTube).
- Worked with another software developer to create robust C/C++ camera calibration and simulation software.

Northern Digital Inc.

Waterloo, Ontario

Intern Advanced Researcher & Embedded Firmware Developer — *May 2018 - Sept. 2019*

- Developed and programmed an embedded handheld device with multiple sensors to fuse with Polaris Vega infrared camera tracking data, showcasing innovation and technical skills.
- Collaborated with a Masters researcher to develop various data fusion algorithms (Vector, Quaternion, Pose estimation) in C++ and Python.
- Worked with another software developer to create a fast C/C++ sensor data simulation software.
- Partnered with another software developer to create a C/C++ and Python graphical viewer of real data (replayed) and simulated data.
- Developed low-level firmware drivers for virtual reality hand remotes including IMUs, ADCs, DACs, FLASH, UART, etc.

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Education

McMaster University

Hamilton, Ontario

Mechatronics Engineering Co-op — *Sept. 2014 - April 2020*

- McMaster Cumulative Grade Point Average 3.7/4.0
- McMaster Engineering Co-op Student of the Year Nominee

Projects

Neural Network Log Analysis

Waterloo, Ontario

Researcher & Developer — *October 2022 - May 2023*

- Developed several neural network models alongside a PhD graduate to detect anomalies in wireless air transmissions and stack procedures.
- Used models such as RNN, RNN Attention-Based, and Transformer to detect anomalies in the nightly runs.

JobFunnel

Waterloo, Ontario

Developer — *June - Sept. 2019*

- Developed webcrawling application alongside other developers to help find and organize job postings with 1900+ stars on GitHub.
- Glassdoor and Indeed implemented CAPTCHAs shortly after the release.